REMARKS – General

By the above amendment, Applicant has amended the title to emphasize the novelty of the invention.

Also, the applicant has rewritten all the claims to define the invention more particularly and distinctly so as to overcome the technical rejections and define the invention patentably over the prior art.

The Claim Rejection Under 35 USC § 112 Has Been Overcame

The last O.A. rejected the Claims 1. Claim 1 has been rewritten. Applicant requests reconsideration of this rejection.

The Claim Objections Has Been Overcame

The last O.A. rejected Claims 3. The Claim 3 has been rewritten. Applicant requests reconsideration of this objection.

The References And Differences Of The Present Invention Thereover

Applicant will discuss the reference and the general novelty of the present invention and its unobviousness over the reference.

Schwengler [US 6,678,259] disclosed a system and method for broadband communication between a network and a customer premise along the line of sight path utilizes redundant communication paths. Schwengler solves the problem with two or more LMDS HUB (24, 26 Fig.1) connected to main communication network (16, Fig.1), a CPE system that is capable to handle two

antenna (20,22 Fig.1) and network control logic (36 Fig.1). Schwengler solves the redundancy problem of communication between CPE (18 Fig.1) and main network (16 Fig.1) when at least two LMDS HUB (24, 26 Fig.1) are available. However, when where is only one of the HUB is available, this method cannot work. Further, the cost and complexity to set up this type of communication is very high. Therefore, the application is limited. Schwengler only solves the problem redundancy between customer premise (18 Fig.1) and network (16 Fig.1) utilizing multiple antennas (20,22 Fig.1) and multiple HUB (24, 26 Fig.1), network control logic (36 Fig.1) and other accessories. When one path is blocked, the customer is still communicating with network with the redundant link. There is always one communication path being wasted by the standby implementation.

The applicant's current invention provides a multi-channel redundant wireless link utilizing a pair of Multi-channel Redundant wireless network link (RWNL) devices. All the communicating sub-links of the applicant's RWNL device aggregates the bandwidths together while provide a group redundancy among the sub-links. There is not waste of equipment while providing better redundancy over the disclosure of Schwengler.

The Claim Rejections Under 35 USC § 103 Has Been Overcame

The last O.A. rejected the Claims 1-5 as being unpatentable "over Schwengler [US 6,678,259]". Claims 1-5 have been rewritten. Applicant requests reconsideration of this rejection, as now applicable to claim 6-10, for the following reasons:

Regarding claim 1, the last OA points out that "Schwengler discloses a system and method for ... utilizing redundant communication paths". And, the last OA also points out that "Schwengler dose not disclose two multi-channel redundant

link devices. The use of more than one multi-channel link device is known in the art to increase the capacity and the performance of the system".

The applicant would like to discuss the reference and differences:

1) The implementation of redundancy is different between Schwengler and the applicant's current invention. Schwengler disclosed a method of redundancy communication between a network and a customer (Abstract line 1). The redundancy is accomplished by one antenna of the customer device communicating to one HUB of the network (fig.1 22, 34, 26) and the other antenna of the customer device communication to another HUB of the network (fig.1, 20, 32, 24). The communication between the customer and the network is always only one "better signal and preferably" communication path (col.6 lines 57-65). The other communication path is always a backup or blocked path. The HUBs (24, 26) broadcast information in a non-directional manner and connect to network via links (fig.1, 28, 30). The customer equipment (fig1. 18) communicate with network (fig1, 16) via HUBs and their links at totally different location. The HUB of LMDS communication is a central transition station with complicated equipments and build-up.

   The applicant's current invention disclosed a multi-channel redundant wireless network (RWNL) link and device. It is redundancy communication link between two RWNL devices. The redundancy of all the wireless networking links is accomplished while all the links are communicating, there is not stand alone backup links for redundancy. The applicant current invention perfectly achieves increasing communication bandwidth between the two RWNL devices by aggregating the bandwidth of all of the links while providing redundancy among the links by remaining working

links take over the communication work of the failed link. (Fig.3, page 6, lines 9- 28)

2) Schwengler dose not provide a one device to one device redundancy. Schwengler only provide the backup redundancy between a customer and a network.

The applicant's current invention provides redundancy communication between two RWNL devices

3) Schwengler's embodiment involves many equipments in different locations. The RWNL device of the applicant's current invention is a standalone operating equipment itself.

4) The applicant's current invention is end-to-end communication solution vs. the Schwengler client to main network communication system. Schwengler's dose provides a customer premise with multiple antennas for multi-channel communication to customer premise. However, this is a one side only multiple channeling, the other side of communication is the HUB equipments locating in different area. The multi-channel of the applicant's current invention is a end-to-end device-to-device multi-channeling.

5) It is improper for Schwengler to add more link devices to increase capacity. There is no operational device/function to do the aggregation of the capacity. Please also refer to the discussion below regarding claim 5.

6) The redundancy of Schwengler is a standby redundancy vs. the applicant's full dynamic redundancy.

In conclusion, the Schwengler's system and method of communication is less capable than the applicant's current invention. Not only that, Schwengler's system and method of communication is a LMDS networking level of the standby redundant implementation involving many different equipments, and, providing a redundant communication between the customer premise and the network. The

applicant's current invention discloses a very advanced direct device to device multi-channel dynamic redundant communication.

Therefore, the applicant suggests the last OA rejects the claim 1 of the applicant's current application over Schwengler is improper. The applicant respectfully request reconsideration of this rejection.

Regarding claim 2, the last OA points out that "Schwengler further discloses a network control logic, which selects the communication path based on the status of the first and second paths (and therefore inherently has a processor to perform this operation) and a plurality of wireless networking units (24, 26 in Fig.1)". Schwengler dose provide a network control unit for selecting the best path and redundancy of the whole communication. However, this is a single side of network control unit and needed to be working with other equipments in the network (16, Fig.1) to achieve the purpose. This is a completely different embodiment comparing to the control unit of the applicant's current invention, because:

1) the control target is different, The control unit of the applicant's current invention is a system function extension attaching to system bus for providing additional control functions to control radio units (Fig 1, Fig2, page 5, lines 31- page 6, line 2). However to the best understanding of the applicant, the network control logic (36, fig.1) of Schwengler's embodiment is a function that running inside or on top of the network (16, Fig.1), and the connection (38, Fig.1) is needed. It is obvious that the network control logic (36, Fig.1) is intend to control the communication links (32, 34 Fig.1) via the network (16, Fig.1) and then the HUB stations (24, 26 Fig.1). In conclusion, disregarding the difference in the detail functions, the control target and control embodiment are complete different between the

network control logic of the Schwengler and the control unit of the applicant's current invention.

2) The functions of the network control are different. As discussed above, the network control logic (36, Fig.1) of Schwengler controls the communication paths (32, 34 Fig.1) via controlling the HUBs (col.6 lines 18-23). It is standalone networking function implementation of LMDS network (16, Fig.1).

However, the control unit (109, Fig.1) of the applicant's current invention is part of the system function of the RWNL device and is inside the RWNL device providing the control extension of the processor unit to wireless networking units inside the RWNL device. Therefore, the function of the network control logic of Schwengler's disclosure is different than the control unit of the applicant's current invention.

In conclusion, the network control logic of Schwengler is different than the control unit of the applicant's current invention in control target, function, and implementation.

Therefore, the applicant suggests the last OA reject the claim 2 of the applicant's current application over Schwengler is improper. The applicant respectfully requests reconsideration of this rejection.

Regarding claim 3, the last OA pointed out that "Schwengler further discloses a method where the wireless networking units (24, 26 fig.1) communicating with correspondent radio unit of the remote RWNL device forms a wireless networking child links (28, 30 in fig.1)".

Even though Schwengler dose provide a pair of communication links (28, 30 in fig.1), however, these are complete different than the wireless networking sub-link of the applicant's current invention, because:

1) The HUBs (fig.1 24,26) are wireless communication base stations locating at different locations along the river (fig.1, 142)the links (fig.1, 28, 30) are usually wired links by the definition of the HUB of LMDS communication. Even if there are wireless links, it is still a link between a HUB station and a network (fig.1, 16). Obviously, these links relates on two complete different HUB equipment sets in different locations, and communicating with a big network (16, Fig1) that involves many more equipments. They are complete different than the sub-links between one RWNL device to another RWNL device of the applicant's current invention.

2) In the embodiment of the applicant's current invention, all the wireless networking units are interconnecting with processor unit via system bus as part of the RWNL device. However, in Schwengler's disclosure, the over all equipments are scattered over many geographical places. Therefore, the communication links are different between Schwengler's disclosure and the embodiment of the applicant's current invention.

3) The wireless networking sub-link of the applicant's current invention is a wireless communication link between the wireless networking units of one RWNL device and the corresponding wireless networking units of the other RWNL device.

4). From the network (fig.1, 16) standpoint of view, the links (fig.1, 28, 30) are completely independent communication links. From the HUBs (fig.1 24,26) standpoint of view, the links (fig.1, 28, 30) are single networking links that connecting HUB to network. Even if both links communication tighter via network (fig.1, 16), then the embodiment still involves two independent equipments (fig.1 24,26) at different locations communication together via an unknown size of network (fig.1, 16). It is known that a LMDS network includes a large amount of communication equipments and supporting equipments. Obviously, the links (fig.1, 28, 30) of Schwengler is

completely different than the direct connecting sub-links of applicant's current invention.

In conclusion, the wireless networking child links are different between Schwengler's disclosure and the applicant's current invention.
Therefore, the applicant suggests the last OA reject the claim 3 of the applicant's current application over Schwengler is improper. The applicant respectfully request reconsideration of this rejection.

Regarding claim 4, the last OA pointed out that "Schwengler further discloses a method wherein all the wireless networking child links are redundant to each other. (See col.1, line 59 –col.2, line 30)."
Schwengler discloses a method wherein all the wireless networking child links are redundant to each other. However, in detail, Schwengler discloses "The customer premises equipment has a first directional antenna operative to communicate in a first line of sight. The customer premise equipment also has a second directional antenna... the first antenna, and second antenna are located so as to form a primary communication path ... and to form a redundant communication path... the network control logic permits transmission by the first transmitter when the primary path is selected and permits transmission by the second transmitter when the redundant path is selected...Utilizing the network control logic to only transmit from the transmitter having a clear line of sight ..."(see col.2 lines 3- 30), Also, Schwengler further discloses " control logic 36 permits transmission by hub 24 when communication path 32 is selected, possibly because communication path 34 is obstructed. Further, control logic 36 permits hub 26 to transmit when path 34 is selected, possibly because path 32 is obstructed" (see col.6 lines 17-23). In conclusion, Schwengler provides a method of redundancy with one communication path working and rest link to be the standby backup link.

The applicant's current invention disclosed a multi-channel redundant wireless network (RWNL) link and device. It is a redundant communication link between two RWNL devices. The redundancy of all the wireless networking links is accomplished while all the links are communicating; there is not stand alone backup link for redundancy. The applicant current invention perfectly achieves increasing communication bandwidth between the two RWNL devices by aggregating the bandwidth of all of the links while providing redundancy among the links by remaining working links take over the communication work of the failed link. (Fig.3, page 6, lines 9- 28)

In conclusion, the applicant's current invention provides a method of communication redundancy with much better capacity and efficiency than the method provided by Schwengler. Therefore, the applicant suggests the last OA rejects the claim 4 of the applicant's current application over Schwengler is improper. The applicant respectfully request reconsideration of this rejection.

Regarding claim 5, the last OA pointed out that "Schwengler further discloses a method wherein the multi-channel redundant wireless networking link aggregates all of its entire wireless networking child links (see col.1 line 59- col.2, line 30)" However, to the best understanding of the applicant, the object of Schwengler is " to provide a system and method for broadband communication between a network and a customer premise along a line of sight path that utilizes a redundant or secondary link to overcome the problems associated with long term obstructions"(col.1 lines 59-64). Also, Schwengler further discloses a system to carry out the object with "The customer premises equipment has a first directional antenna operative to communicate in a first line of sight. The customer Premise equipment also has a second directional antenna... the first antenna, and second antenna are located so as to form a primary communication path ... and to form a redundant communication path... the network control logic permits

transmission by the first transmitter when the primary path is selected and permits transmission by the second transmitter when the redundant path is selected...Utilizing the network control logic to only transmit from the transmitter having a clear line of sight ..."(see col.2 lines 3- 30), Still also, Schwengler further discloses " control logic 36 permits transmission by hub 24 when communication path 32 is selected, possibly because communication path 34 is obstructed. Further, control logic 36 permits hub 26 to transmit when path 34 is selected, possibly because path 32 is obstructed" (see col.6 lines 17-23).

In conclusion, Schwengler only discloses a redundant communication system at large networking level with multiple different equipments to form two redundant communication path between the network (16, Fig.1) and the customer premises (18, Fig.1) with only one path communicating all the time. This is the result of the key functions of the network control logic only permit one transmitter transmitting at the time. Obviously, no communication capacity aggregation is provided nor possible in Schwengler disclosure.

Therefore, the applicant suggests the last OA reject the claim 5 of the applicant's current application over Schwengler is improper. The applicant respectfully request reconsideration of this rejection.

Conclusion

For all of the above reasons, the applicant submits that the specification and claims are now in proper form, and that the claims all define patentably over the prior art. Therefore he submits that this application is now in condition for allowance, which action he respectfully solicits.

Conditional Request For Constructive Assistance

Applicant has amended the specification and claims of this application so that they are proper, definite, and define novel structure which is also unobvious. If, for any reason this application is not believed to be in full condition of allowance, Applicant respectfully request the constructive assistance and suggestions of the Examiner pursuant to M.P.E.P. § 2173.02 and § 707.07(j) in order that the undersigned can place this applicant in allowable condition as soon as possible and without the need for further proceedings.

Very respectfully,

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